

REMARKS

Claims 1-15 are pending in this application. By this Amendment, the specification and claims 1-5, 8-10 and 12-15 are amended. No new matter is added.

I. Objection to the Specification

The Abstract is objected to for containing more than one paragraph and having more than 150 words, as well as for the use of "said". The Abstract is amended in reply to the objection.

II. Claim Objections

Claims 1, 3, 4 and 9 are objected to due to informalities. The claims are amended in reply to the objections.

III. Claim Rejections Under 35 U.S.C. §112

Claims 1-15 are rejected under 35 U.S.C. §112, second paragraph. The rejection is respectfully traversed.

Claims 1-5, 8-10 and 12-15 are amended in reply to the rejection.

Regarding the rejection to line 15 of claim 1, the Office Action states that it is unclear how "metal ions . . . is equal to or greater than -830 mV". Applicants submit that it is not the metal ions that are equal to or greater than the -830 mV. Rather, it is the dissolution precipitation equilibrium potential at which the metal ions dissolved in the phosphate chemical treatment bath are reduced and precipitate as metal, that is equal to or greater than -830 mV.

Regarding the rejection of line 17 of claim 1, "solvent in the form of water" means water as a solvent.

Regarding the rejection of lines 4 and 5 of claim 3 for lack of antecedent basis, Applicants submit that both the electrode and the treatment bath recited in claim 3 have antecedent basis in claim 3 and/or claim 1.

Regarding the rejection of claim 4, lines 5 and 6 as being unclear, Applicants submit that the objected to phrase means "a steel article".

Regarding the rejection of lines 5-8 of claim 9 Applicants submit that the treatment tank, as recited in amended claim 9 is separated in the electrolytic treatment tank and the auxiliary tank.

IV. Claim Rejections Under 35 U.S.C. §103

Claims 1-15 are rejected under 35 U.S.C. §103(a) as unpatentable over European Patent Application 0597131 to Matsuda (EP '131) in combination with U.S. Patent No. 4,565,585 to Matsuda (the 585 Patent). The rejection is respectfully traversed.

Applicants assert that neither EP '131 or the '585 Patent, whether considered alone or in combination, disclose or suggest each and every feature recited in the rejected claims. For example, the combination of references does not disclose or suggest an electrolytic phosphate chemical treatment method . . . comprising the steps of performing the electrolytic treatment and the article in a phosphate chemical treatment bath . . . substantially free of metal ions other than those which are a component of the film.

Although the Office Action alleges that EP '131 discloses a bath that is substantially free of metal ions other than those which are a component of the film the reference does not disclose such a feature. Rather, EP '131 discloses a bath that is based on a conventional non-electrolytic bath, in which metal ions other than those which are a component of a film are not substantially free. In contrast, the rejected claims recite a bath that is substantially free of metal ions other than those which are a component of the film.

The Office Action also admits that EP '131 does not teach "wherein the ORP is maintained at equal to or greater than 700 mV". To overcome the admitted deficiency, the Office Action combines the '585 Patent and alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references as

alleged in the Office Action. However, as the '585 Patent does not disclose or suggest an electrolytic phosphate chemical treatment method, Applicants assert that there is no motivation or suggestion to make the combination as proposed. Rather, the '585 Patent relates to a non-electrolytic phosphate chemical treatment. The non-electrolytic treatment is conducted by an electrochemical reaction without using an external power source. Accordingly, there is no motivation or suggestion to make the alleged combination.

Even were the combination made, each and every feature would not be disclosed or suggested. For example, the '585 Patent does not teach an ORP maintained at equal to or greater than 700 mV. Rather, the '585 Patent teaches an ORP of 0 to 700 mV to control the phosphate chemical treatment.

The Office Action further alleges that EP '131 discloses a phosphate chemical treatment bath that has an oxidation reduction potential (ORP) of 250-650 mV. However, the ORP in EP '131 is indicated as the potential relative to an AgCl electrode. Such an ORP corresponds to 460 to 860 mV indicated as the potential relative to a standard hydrogen electrode. Thus, EP '131 does not disclose or suggest a phosphate chemical treatment bath as recited in the rejected claims.

The Office Action further alleges that EP '131 discloses additional the features of claim 9, wherein the NO, NO₂ and/or NO₂O₄ gases generated and dissolved in an electrolytic treatment tank are removed from the treatment bath by separating the treatment tank into an electrolytic treatment tank that carries out electrolytic treatment and an auxiliary tank that does not carry out electrolytic treatment, circulating the treatment bath between two tanks, and providing a mechanism that opens treatment liquid to the atmosphere. However, in EP '131 no such treatment is required to remove NO₂ and NO₂O₄ gases since a sludge is easily formed in the treatment bath.

The Office Action further alleges that the '585 Patent teaches an electrolytic phosphate chemical treatment method of forming a film composed of a phosphate compound and a metal that is reduced and precipitated from an ionic state on the surface of a metal material article to be treated wherein the ORP is "maintained at equal to or greater than 700 mV". However, the film in the '585 Patent is formed by a non-electrolytic phosphate chemical treatment method while the film in the present invention is formed by an electrolytic phosphate chemical treatment method. Thus, the films in the '585 Patent and the instant Application are extremely different. For example, the films formed by the electrolytic treatment contain a large amount of metal.

Additionally, regarding the allegation that one skilled in the art would have been motivated to modify the method of EP '131 using the ORP described in the '585 Patent, the '585 Patent requires an ORP of 0 to 700 mV to control the phosphate chemical treatment reaction. In contrast, the rejected claims recite an ORP maintained at equal to or greater than 700 mV. Thus, one skilled in the art would not be motivated to make the combination as alleged.

The Office Action further alleges that EP '131 teaches an ORP of 560 mV or greater. However, in EP '131 the ORP of 560 mV (AgCl electrode) equals 770 mV in a standard hydrogen electrode. As discussed above, the composition for the bath is based on a conventional non-electrolytic bath, in which metal ions other than those which are a component of a film are not substantially free. Thus, although Fe^{3+} presents in the bath by the conversion of Fe^{2+} to Fe^{3+} a sludge is also formed at the same time by which the desirable reaction is prevented.

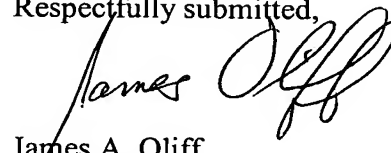
In light of the foregoing, Applicants assert that the combination of references does not disclose or suggest all of the features recited in the rejected claims. Accordingly, Applicants respectfully request the rejection of claims 1-15 under 35 U.S.C. §103(a) be withdrawn.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: December 3, 2003

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